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10/532,430	04/25/2005	Kenji Yamane	OGW-0365	1792

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Patrick G. Burns
Greer, Burns & Crain, Ltd.
Suite 2500
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
MAKI, STEVEN D	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,430	YAMANE, KENJI	
	Examiner	Art Unit	
	Steven D. Maki	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 4 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1) The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2) Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 6, the subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (i.e. the new matter) is the subject matter of "vortex creating means provided in a wall face of the circumferential grooves, for creating a vortex flow of water that enters the circumferential grooves". There is no literal antecedent basis for the "vortex creating means", which invokes 112 sixth paragraph, and it is not seen how the disclosure of "line portions composed of a plurality of ridges or recesses inclined in one direction with respect to the groove longitudinal direction and being provided in the wall face of the groove" reasonably conveys the broader scope of "vortex creating means". No guidance is offered in the original disclosure as to what would be the structural equivalents of the line portions.

3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to lines 11-12 of claim 1, it is unclear if a method limitation or a capability is being required. In claim 1, it is suggested to (1) change "water flows" (line 11) to --water can flow-- and (2) change "is discharged" (line 12) to --can be discharged--.

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Japan 509

7) **Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Japan 509 (JP 2001-287509).**

Japan 509 discloses a pneumatic tire with a tread comprising blocks, lateral grooves and circumferential grooves. Water repellant rubber 13 is formed on the exposed groove wall at spaced locations between the tread surface and groove bottom as shown in figures 1, 3 and 4. The width W is 0.5-2.0 mm and the pitch P is 1.5 to 2.5 times the width W. See paragraph 77 of the machine translation. Japan 509 teaches

that a vortex 15 can be made in the water flowing through the groove. See figure 13 and paragraph 91.

The claimed tire is anticipated by Japan 509's tire. The claimed "vortex creating means" reads on the water repellant rubber 13 and/or the water repellent rubber 13 and hydrophilic rubber 32 because this structure is capable of creating a vortex 15 as shown in figure 13.

Heinen

8) **Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinen (US 6,415,835) in view of Tomioka et al (US 5,211,779) or Williams (US 4,299,264)**

Heinen discloses a pneumatic tire having a tread comprising a circumferential groove 14 for enclosing and channeling water during use of the tire on wet pavement wherein both side surfaces of the groove are provided with peaks and valleys such that each valley extends continuously from one side surface to the other side surface. See abstract. The depth D1 of the peaks and valleys is 5-15% of the groove width. Preferably, the depth D1 is less than 3 mm. The pitch P1 of the peaks and valleys is less than 40% of the groove width. Preferably, the pitch P1 will be less than 5 mm. Heinen teaches providing the peaks and valleys on a first side such that they 180 degrees out of phase from the peaks and valleys on the second side surface. Attention is directed to the figure found on page 3 of the office action dated 1-8-08. The undulating lines in the above noted figure represent the edges of a groove at the tread surface. The peaks and valleys at one groove edge are 180 degrees out of phase from

the peaks and valleys at the other groove edge. For example, peak 1 is directly opposite peak 2. Another example, peak 3 is directly across from peak 4. A continuous peak can extend from peak 1 to peak 2 along a line inclined at angle θ with respect to the line L (the longitudinal direction of the groove) wherein angle θ is 90 degrees. However, a continuous peak can extend from peak A to peak B along a line inclined at angle α with respect to line L (the longitudinal direction of the groove). This is true even though peak A is directly across from peak X and peak B is directly across from peak Y. The path of a continuous peak from one groove edge to the other groove edge is independent of the phase of the peaks at the tread surface. More importantly, Heinen fails to require peaks and valleys on one side surface to be 180 degrees out of phase from the peaks on the other side surface. In Heinen, the longitudinal direction of groove corresponds to the imaginary line or arc located on the median plane within the depth of the groove wherein the median plane bisects the channel formed by the respective surfaces of the groove. See col. 5 lines 59-67. Heinen teaches that the peaks and valleys follow imaginary lines that are skewed with respect to the median plane line or arc at 45 to 90 degrees. See col. 6 lines 1-4. Heinen teaches that the lines are skewed at 90 degrees in the preferred embodiment, which is illustrated in figure 7. See col. 4 lines 28-29, col. 6 lines 4-7. With respect to this skewing at an angle of 45-90 degrees, Heinen explains:

> **This angle measured by <u>transposing</u> each line or arc into the same plane and measuring the angle at the intersection of the respective lines.**

See col. 6 lines 7-9 (emphasis added). When applicant created figure 3 of the original disclosure, applicant transposed the line followed by the ridges or peaks 4 into

the same plane (the tread surface) in order to measure angle alpha. Heinen's angle of 45-90 degrees at which the peaks and valleys may be skewed directly corresponds to the angle alpha indicated in figure 3. Thus, Heinen discloses an angle of 45 to 90 degrees.

With respect to "vortex creating means", Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees), are capable of forming a vortex flow in the water. It is emphasized that (1) the structure disclosed in the specification and used by applicant to create the vortex flow comprises ridges or recesses that are inclined in one direction with respect to the circumferential direction and (2) Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees) are ridges or recesses that are inclined in one direction with respect to the circumferential direction.

With respect to "wherein the line portions are provided in a range of not less than 50% of the wall face of the circumferential grooves in a cross section of the longitudinal grooves [the circumferential grooves] orthogonal to the groove longitudinal direction" (claim 1), Heinen discloses 100% of the wall face of the groove being provided with the grooves and valleys. See figure 7.

With respect to lateral grooves (claim 6), it would have been obvious to one of ordinary skill in the art to use Heinen's peaks and valleys in a tread having circumferential grooves and lateral grooves extending away from the tread surface circumferential center (tire equator) wherein the distal ends of the lateral grooves are open in view of (1) Heinen's teaching to use the peaks and valleys in a groove, which may extend circumferentially or laterally, to decrease friction drag and thereby increase

flow of water from the groove (col. 2 lines 66-67, col. 3 lines 1-25, 47-52, col. 4 lines 52-60) and (2) it is well known in the tire tread art to form a tire tread with circumferential grooves and lateral grooves having open distal ends to improve water drainage as evidenced by Tomioka et al (figure 2, figure 3) or Williams (figure 2, figure 5). Thus, Tomioka et al or Williams motivate one of ordinary skill in the art to use such lateral grooves in Heinen's tread in order to improve drainage of water from the tread.

9) **Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinen (US 6,415,835) in view of Shesterkin (US 2,268,344) and further in view of Tomioka et al (US 5,211,779) or Williams (US 4,299,264) and optionally further in view of Japan 509 (JP 2001-287509).**

Heinen discloses a pneumatic tire having a tread comprising a circumferential groove 14 for enclosing and channeling water during use of the tire on wet pavement wherein both side surfaces of the groove are provided with peaks and valleys such that each valley extends continuously from one side surface to the other side surface. See abstract. The depth D1 of the peaks and valleys is 5-15% of the groove width. Preferably, the depth D1 is less than 3 mm. The pitch P1 of the peaks and valleys is less than 40% of the groove width. Preferably, the pitch P1 will be less than 5 mm. Heinen teaches providing the peaks and valleys on a first side such that they 180 degrees out of phase from the peaks and valleys on the second side surface. Attention is directed to the figure found on page 3 of the office action dated 1-8-08. The undulating lines in the above noted figure represent the edges of a groove at the tread surface. The peaks and valleys at one groove edge are 180 degrees out of phase from

the peaks and valleys at the other groove edge. For example, peak 1 is directly opposite peak 2. Another example, peak 3 is directly across from peak 4. A continuous peak can extend from peak 1 to peak 2 along a line inclined at angle θ with respect to the line L (the longitudinal direction of the groove) wherein angle θ is 90 degrees. However, a continuous peak can extend from peak A to peak B along a line inclined at angle α with respect to line L (the longitudinal direction of the groove). This is true even though peak A is directly across from peak X and peak B is directly across from peak Y. The path of a continuous peak from one groove edge to the other groove edge is independent of the phase of the peaks at the tread surface. More importantly, Heinen fails to require peaks and valleys on one side surface to be 180 degrees out of phase from the peaks on the other side surface. In Heinen, the longitudinal direction of groove corresponds to the imaginary line or arc located on the median plane within the depth of the groove wherein the median plane bisects the channel formed by the respective surfaces of the groove. See col. 5 lines 59-67. Heinen teaches that the peaks and valleys follow imaginary lines that are skewed with respect to the median plane line or arc at 45 to 90 degrees. See col. 6 lines 1-4. Heinen teaches that the lines are skewed at 90 degrees in the preferred embodiment, which is illustrated in figure 7. See col. 4 lines 28-29, col. 6 lines 4-7. With respect to this skewing at an angle of 45-90 degrees, Heinen explains:

> **This angle measured by <u>transposing</u> each line or arc into the same plane and measuring the angle at the intersection of the respective lines.**

See col. 6 lines 7-9 (emphasis added). When applicant created figure 3 of the original disclosure, applicant transposed the line followed by the ridges or peaks 4 into the same

plane (the tread surface) in order to measure angle alpha. Heinen's angle of 45-90 degrees at which the peaks and valleys may be skewed directly corresponds to the angle alpha indicated in figure 3. Thus, Heinen discloses an angle of 45 to 90 degrees. Heinen does not recite an angle of "10 degrees to 35 degrees".

As to claim 1, it would have been obvious to one of ordinary skill in the art to orient the peaks and valleys ("line portions") in Heinen's circumferential groove such that the peaks and valleys are inclined at an angle "from 10^{o} to 35^{o} with respect to the tire circumferential direction" such as 35 degrees since (1) Heinen, directed to a pneumatic tire having grooves with peaks and valleys, suggests inclining the valleys at an angle of 45-90 degrees with respect to the median plane of the groove extending in the longitudinal direction to reduce skin friction drag along the groove surface and increase the flow of water from the groove and (2) Shesterkin, directed to a pneumatic tire having grooves with peaks and valleys, teaches forming ridges ("peaks") at the bottom of circumferential grooves such that they are inclined at an angle of at least 20 degrees (e.g. an angle of the order to 45 degrees or an angle of 90 degrees) with respect to the longitudinal direction of the grooves to deviate the course of cracks or reduce the number of cracks. The Federal Circuit has stated: "... our case law does not require that a particular combination must be the preferred, or most desirable, combination described in the prior art in order to provide motivation for the current invention." In re Fulton 73 USPQ2D 1141, 1146 (Fed. Cir. 2004). Heinen does not teach that angles less than 45 degrees are undesirable and, therefore, does not teach away. When the applied prior art to Heinen and Shesterkin is considered as a whole,

one of ordinary skill in the art would have readily appreciated that the angle of Heinen's valleys may be inclined at an angle less than 45 degrees such as 35 degrees. The expected benefits of inclining Heinen's valleys at an angle of less than 45 degrees such as 35 degrees include increased flow of water from the groove (Heinen) and reduced cracking (Shesterkin).

With respect to "vortex creating means" / "water flows [can flow] in the circumferential grooves along the line portions to form a vortex flow, and is discharged [can be discharged] from the circumferential grooves", Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees) or as suggested (e.g. at 35 degrees), are capable of forming a vortex flow in the water. It is emphasized that (1) the structure disclosed in the specification and used by applicant to create the vortex flow comprises ridges or recesses that are inclined in one direction with respect to the circumferential direction and (2) Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees) or as suggested (e.g. at 35 degrees) are ridges or recesses that are inclined in one direction with respect to the circumferential direction. As optional evidence of this capability of forming a vortex flow", Japan 509 is cited. In view of (1) Heinen's teaching that the peaks and valleys break up eddies to reduce friction drag and (2) Japan 509's teaching that a vortex flow accompanies holding down of generation of random eddies, the optional Japan 509 constitutes evidence that Heinen's peaks and valleys are capable of forming a vortex flow. The break up of eddies and the formation of vortex flow are consistent with each other. See paragraph 91 of Japan 509. No unexpected results for the claimed range of 10-35 degrees over 45 degrees has been shown.

With respect to "wherein the line portions are provided in a range of not less than 50% of the wall face of the circumferential grooves in a cross section of the longitudinal grooves [the circumferential grooves] orthogonal to the groove longitudinal direction" (claim 1), Heinen discloses 100% of the wall face of the groove being provided with the grooves and valleys. See figure 7.

With respect to lateral grooves (claims 1 and 6), it would have been obvious to one of ordinary skill in the art to use Heinen's peaks and valleys in a tread having circumferential grooves and lateral grooves extending away from the tread surface circumferential center (tire equator) wherein the distal ends of the lateral grooves are open in view of (1) Heinen's teaching to use the peaks and valleys in a groove, which may extend circumferentially or laterally, to decrease friction drag and thereby increase flow of water from the groove (col. 2 lines 66-67, col. 3 lines 1-25, 47-52, col. 4 lines 52-60) and (2) it is well known in the tire tread art to form a tire tread with circumferential grooves and lateral grooves having open distal ends to improve water drainage as evidenced by Tomioka et al (figure 2, figure 3) or Williams (figure 2, figure 5). Thus, Tomioka et al or Williams motivate one of ordinary skill in the art to use such lateral grooves in Heinen's tread in order to improve drainage of water from the tread.

As to claim 3, it would have been obvious to one of ordinary skill in the art to provide the peaks and valleys with a height of not smaller than 0.3 mm and not more than 20% of each of a width and depth of the groove in view of Heinen's teaching to provide the peaks and valleys with a depth D1 of 5-15% of the groove width / less than 3 mm and a pitch P1 less than 40% of the groove width / less than 5 mm.

As to claim 4, Heinen teaches a pitch P1 of less than 5 mm which overlaps the claimed range of 1.5 to 8.0 mm.

Remarks

10) Applicant's arguments with respect to claims 1, 3, 4 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 4-7-08 have been fully considered but they are not persuasive.

Applicant argues that the peaks and valleys disclosed in Heinen are designed to prevent the formation of eddies and not to encourage vortex formation. This argument is not persuasive. Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees) or as suggested (e.g. at 35 degrees), are capable of forming a vortex flow in the water. It is emphasized that (1) the structure disclosed in the specification and used by applicant to create the vortex flow comprises ridges or recesses that are inclined in one direction with respect to the circumferential direction and (2) Heinen's peaks and valleys, when inclined as disclosed (e.g. at 45 degrees) or as suggested (e.g. at 35 degrees) are ridges or recesses that are inclined in one direction with respect to the circumferential direction. As optional evidence of this capability of forming a vortex flow", Japan 509 is cited. In view of (1) Heinen's teaching that the peaks and valleys break up eddies to reduce friction drag and (2) Japan 509's teaching that a vortex flow accompanies holding down of generation of random eddies, the optional Japan 509 constitutes evidence that Heinen's peaks and valleys are capable of forming a vortex flow. Contrary to applicant's argument, the break up of eddies and the formation of

vortex flow are consistent with each other. See paragraph 91 of Japan 509. No unexpected results for the claimed range of 10-35 degrees over 45 degrees has been shown. Applicant's "unexpected results" argument (prevention of hydroplaning) is not persuasive because (1) the claimed invention has not been compared to Heinen, which teaches that the peaks and valleys increase the amount of water ejected from the groove to increase wet traction and (2) Tomioka / Williams suggest using lateral grooves to improve water drainage from a tire tread. No unexpected results over the applied prior art has been shown.

Applicant argues that there is no motivation to combine Heinen and Shesterkin. Examiner disagrees. Heinen and Shesterkin are in the same field of endeavor of tire treads. Heinen and Shesterkin teach the same specific structure of peaks and valleys, which are formed in a circumferential groove and are inclined with respect to the circumferential direction. In view of this similarity in structure in the same field of endeavor coupled with the benefit of reduced cracking disclosed by Shesterkin, there is ample suggestion to apply the angle of inclination teaching for peaks and valleys found in Shesterkin to the inclined peaks and valleys of Heinen.

11) No claim is allowed.

12) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/
Primary Examiner, Art Unit 1791

Steven D. Maki
July 7, 2008